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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,408	04/01/2004	Stephen J. Franck	Franck 4	3194

46900 7590 10/03/2005

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EXAMINER

DAVIDSON, DAN

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/817,408	<b>Applicant(s)</b> FRANCK, STEPHEN J.	
	<b>Examiner</b> Dan I. Davidson	<b>Art Unit</b> 2651	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 16-18 is/are rejected.
- 7) ☒ Claim(s) 4-15, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>04012004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The information disclosure statement filed April 1, 2004 has been received and has been considered and made of record.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by DeGroat et al (US 6,449,110 B1).

Re claims 1-2 and 17-18; DeGroat et al disclose an apparatus, comprising an asymmetry-changing circuit (Fig. 4, 22; col. 6, lines 26-29; col. 10, lines 47-49) adapted to process a first signal having positive and negative pulses and characterized by a first asymmetry (col. 6, lines 23-29), and based on the first signal, generate a second signal having positive and negative pulses and characterized by a second asymmetry different from the first asymmetry (col. 10, lines 47-49; the non-linear distortion is canceled), wherein the second signal is generated by providing a signal contribution corresponding to a higher-than-second order of the first signal (col. 14, lines 38-45). Asymmetry distortion by definition involves a signal having positive and negative pulses of different amplitudes. Cancellation of asymmetry by definition creates positive and negative pulses of substantially uniform amplitudes.

Re claim 3; DeGroat et al disclose an additional signal contribution corresponding to a second order of the first signal (col. 14, lines 40-45; a third order polynomial will by definition contain a signal contribution corresponding to a second order of the first signal).

Re claim 16; DeGroat et al disclose that the first signal (Fig. 4, 71) corresponds to a signal generated by a read head of a magnetic disk drive (Fig. 4, 10, 8); and the asymmetry-reducing circuit is implemented in an integrated circuit and is part of read/write channel of the magnetic disk drive (col. 6, lines 42-45).

***Allowable Subject Matter***

4. Claims 4-15 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re claim 4; the prior art of record, and in particular DeGroat et al (US 6,449,110 B1) and Pisati et al (US 6,707,623 B2), fails to teach or suggest that the asymmetry reducing circuit comprises two serially connected circuits, wherein each of the serially connected circuits is adapted to generate an output signal corresponding to a second-order function of a signal applied to the serially connected circuit.

Re claims 6 and 19; the prior art of record, and in particular DeGroat et al (US 6,449,110 B1) and Pisati et al (US 6,707,623 B2), fails to teach or suggest an exponential-term generator adapted to generate an output signal having an amplitude substantially equal to the exponent of a signal produced by the linear multiplier.

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Re claim 7; the prior art of record, and in particular Pisati et al (US 6,707,623 B2), fails to teach or suggest that conductance of the MOS devices provides feedback resistances to the differential amplifier.

Re claim 20; the prior art of record, and in particular DeGroat et al (US 6,449,110 B1) and Pisati et al (US 6,707,623 B2), fails to teach or suggest that the variable-gain amplifier is adapted to implement the transfer function listed in the claim.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pisati et al (US 6,707,623 B2) teach having an asymmetry correction circuit with a fourth-order signal contribution, the correction circuit having MOS transistors and a differential input and output.

Bloodworth et al (US 6,147,828 A) and Rezzi et al (US 6,043,943 A) teach asymmetry correction circuits.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan I. Davidson whose telephone number is (571) 272-7552. The examiner can normally be reached on Monday-Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth, can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DID

Dan I Davidson  
September 28, 2005

  
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